



Blue Tiger
(*Tirumala hamata hamata*)
on *Secamone elliptica*

METAMORPHOSIS

AUSTRALIA

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PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the magazine.
See BOIC Programme.

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Membership fees are \$30 for individuals, schools and organizations.

AIMS OF ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

MAGAZINE DEADLINES

If you want to submit an item for publication the following deadlines apply:

March issue – February 1st

June issue – May 1st

September issue – August 1st

December issue – November 1st

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COVER PAINTING

Blue Tiger (*Tirumala hamata hamata*) – Painting by Elaine Allison - prints are available direct from the artist; contact via email at elaineallisonart@gmail.com



FROM THE PRESIDENT

The proliferation of insects as a result of recent favourable weather conditions has certainly attracted the attention of a large number of people and of the media. This has provided an opportunity to inform a wider audience of the world of invertebrates. As the Blue Tiger butterfly has been the main focus of public attention, this insect features in our cover story and elsewhere. We thank Wesley Jenkinson and John Moss who have combined to flesh out the knowledge of the readers of our magazine. Elaine Allison's painting is her first to be published here and I am sure you will admire and appreciate the result of her artistic efforts.

Many thanks are owed to the various other contributors whose articles have made this edition of the magazine an interesting and informative read. In particular, I thank Kelvin Dunn who has taken the time to travel extensively, make meticulous observations and produce detailed reports to share his discoveries with us.

All members in the Brisbane area are invited to attend the Annual General Meeting of the Club at IndigiScapes, Capalaba on April 18th next to be followed by a guided walk through the gardens and bush area of this attractive and interesting facility. As I will be retiring from all management committee activities at that time, your presence will assist in the election of, and welcome to, a new BOIC president.

Best wishes Ross

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Life history notes on the Blue Tiger, *Tirumala hamata hamata* (W.S. Macleay, 1826) Lepidoptera: Nymphalidae - Wesley Jenkinson



Blue Tiger (*Tirumala hamata hamata*)
Photo Judith Jenkinson

This well-known butterfly species is frequently encountered along much of eastern Queensland. The adults are migratory and can number in their tens of thousands when this occurs. They frequent a wide range of habitats from rainforest to wide open woodlands and grasslands, particularly during migrations. It also penetrates inland west of the Great Dividing Range into the drier regions.

Valentine (1988) noted that “although a specimen of the Blue Tiger was not included in the Banks' collection, there is a description in his journal of a vast aggregation of butterflies which appear to have been Blue Tigers”. He further states that “on 29th of May 1770, when the *Endeavour* was about halfway between (the latitudes of what eventually became) Rockhampton and

Mackay, Banks recorded seeing 'acres' of them”.

The main breeding habitats are dry vine forest and littoral rainforest where the host plants (vines in the family Asclepiadaceae) are growing. In South-east Queensland the main hostplant is *Secamone elliptica* (or Corky Milk Vine) and although *Cynanchum carnosum* (Mangrove Milk Vine) has been listed in the past, it appears to be rarely used (see J.T.StL. Moss comment in Braby, 2000).

In central coastal Queensland the adults aggregate during the winter months in large numbers in moist gullies in littoral rainforest (Moss, 1995; Valentine, 1988). Here they perch on dead sticks or branches and can be found in company with other nymphalids including *Euploea sylvester*, *E. core* and *E. tulliolus*.



Aggregation at Shoalwater July 2010



The adults fly in sunny weather and often in warm cloudy conditions and are capable of rapid flight when disturbed. Both sexes are readily attracted to a wide range of small native and introduced flowers and can also be observed imbibing moisture from the ground during hot weather.



Within Queensland, individual specimens show slight variation in the size and shape of the blue wing markings. To determine the sexes, males have a clearly visible small protruding pouch on the hindwing underside and a corresponding patch of grey sex scales on the hindwing upperside.

Wingspans for the pictured adult specimens are: male 75mm and females 70mm.



Tirumala hamata hamata (Blue Tiger)
Images left to right: male, female

Ovipositing females flutter slowly around the host plants and settle, laying the eggs singly, chiefly on the upperside of fresh young leaves and shoots. The wings often remain slightly open while ovipositing occurs. Females will oviposit within centimetres of ground level if suitable fresh leaves are available.



Freshly laid egg

In January 2007, an egg was collected from near Beaudesert and raised through to an adult on Corky Milk Vine (*S. elliptica*). This egg was barrel shaped, approximately 0.7 mm wide x 1.3 mm high, cream with approx 21 coarse vertical ribs with very fine horizontal lines

In captivity the larva consumed most of the eggshell soon after hatching and fed from the edges of soft, fresh leaves during daylight hours. It completed five instars and attained a length of 40mm.





1st instar larva



1st instar larva (mature)



2nd instar larva



3rd instar larva



4th instar larva



5th instar larva

The pupa, measuring 21mm in length, was located below a stem of the host plant. It was attached with silk only by the cremaster. Under natural conditions the larvae usually leave the host vine and pupate below a leaf on a nearby shrub or tree.



Pupa lateral view



Pupa ventral view



Pupa pre-emergence



The total time from egg to adult was almost one month, with egg duration 4 days, larval duration 13 days while pupal duration was 10 days.

Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, I have records of adults from late October through to July. In this location they are more numerous from late spring until late summer, with these broods generally flying in a southerly direction. However, this largely relates to the timing of local rainfall triggering fresh growth of the host plants.

Numbers of migratory butterflies in this region appeared to be declining in recent years, probably due to habitat damage especially land clearing. Nonetheless, an enormous migration has been occurring in South-east Queensland, starting from early November 2014, and which is still current in early February 2015 (when this article was written). This has caused much public wonderment and comment leading to local media coverage.



Mating pair, male at top

In addition a recent visit to Mt French National Park, in the shire near Boonah, in company with John Moss, resulted in the finding of many larvae of this butterfly on *Secamone elliptica*, which was in abundance. We felt that this localised breeding aggregation would have contributed in part to the current general migration.

Acknowledgement: I wish to thank John Moss for reviewing and amending the manuscript to account for historical and host plant information.

Photos (except first image) Wesley Jenkinson

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ITEMS OF INTEREST

Moths of Kutini-Payamu (Iron Range) National Park -

Graham J. McDonald

Introduction

Iron Range is located on the eastern side of Cape York Peninsula, a little more than halfway between Cooktown and Cape York, near the settlement of Lockhart River. It contains the largest area of tropical rainforest on Cape York Peninsula. This is due largely to the presence of a high mountain range very close to the coast. The prevailing winds from the south-east are forced to move up the slopes causing cooling and consequent condensation of the moisture. The soils are also quite deep and friable, formed from metamorphic rocks rich in iron.

All of the photos were taken between June 29 and July 5, 2014. Most were taken of moths resting on a light sheet. Light traps were set up in a different location in the Iron Range area on seven nights, which even in “winter” never really drops below 18°C.



Fig. 1

FAMILY ARCTIIDAE, S/F: LITHOSIINAE

Gymnasura flavia

Cook's Hut Campground, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°42'36.6" S, 143°17'33.09" E.

Arctid moths are small to medium, usually with yellow, red, black and white colours. Most are considered poisonous or distasteful to predators.

There are believed to be about 280 species in Australia.

Fig. 2

F: URANIIDAE, S/F: EPIPLEMINAE

Phazaca interrupta

Cook's Hut Campground, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°42'36.6" S, 143°17'33.09" E.



The Uraniidae family of moths are large to medium, mostly confined to rainforest habitats in the north of Australia. This species is unusual in that it occurs in arid zones as well.

This species has the unusual resting pose of rolling its forewings. The moth in the photo also had this pose when it landed on the sheet, but then unrolled the forewings into a normal (flattened) position.



Fig. 3

F: ARCTIIDAE, S/F: LITHOSIINAE

Heterallactis phlogozona

Old Coen Walk, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°44'14.43" S, 143°15'42.87" E.

This genus of arctid moths is tropical and subtropical in distribution. Most have a yellow background wing colour traversed by red or brown bands or broad areas.

They are all small to medium in size.

Fig. 4

F: CRAMBIDAE, S/F: ACENTROPHINAE

Theila triplaga

Old Coen Walk, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°44'14.43" S, 143°15'42.87" E.

This colourful small moth belongs to a group of moths that have aquatic larvae.

The larvae have up to four different methods of breathing under water where they feed on aquatic plants.

Acentrophinae are generally small to medium moths with orange, yellow, black and white dots and bands, but some such as the common and widespread *Hygraula nitens* are dull coloured.

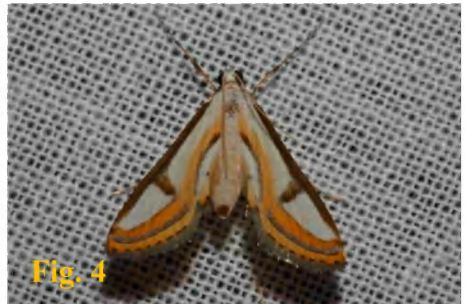




Fig. 5

F: CRAMBIDAE, S/F: ACENTROPHINAE

Parapoynx polydectalis

Old Coen Walk, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°44'14.43" S, 143°15'42.87" E.

This species of aquatic moth seems to have a broad distribution. I have photographed it on several occasions at Mudgeeraba in S.E. Queensland.

Fig. 6

F: LIMACODIDAE (Cup Moths)

Hydroclada kenricki

Old Coen Walk, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°44'14.43" S, 143°15'42.87" E.

Cup moths are medium to large moths with wings held steeply roof-wise at rest. The antennal pectinations in the male shorten rapidly towards the tip as seen in the photo. Larvae, of this group, are well known for their bright colours, slug-like shape and the ability to sting.



Fig. 7

F: LACTURIDAE

Anticrates metreta

Iron Range Road



G.P.S. 12°44'20.86"S, 143°14'40.26"E.

These moths are small to medium with antennae held out in front of the head at 45°.

They have bright colours of red, orange, yellow and black.

They are mainly found inhabiting tropical and sub-tropical rainforest areas.

Fig. 8

F: SATURNIIDAE

Neodipthera sulphurea

Iron Range Road

G.P.S. 12°44'20.86"S, 143°14'40.26"E.

This family contains some of the world's largest and most popular moths. The species illustrated is not as large as the similar and well-known gum emperor moths and the hercules moths.

Larvae are large and colourful with sparse hairs and fleshy turrets.



Fig. 9

F: CRAMBIDAE, S/F: SPILOMELINAE

Glyphodes actorionalis

Iron Range Road

G.P.S. 12°44'20.86"S, 143°14'40.26"E.

The Glyphodes moths generally have transparent to translucent wing panels that reflect a bluish or violet light.

There are about twenty recorded Australian species, many of which occur in northern Queensland.

Fig.10

F: GEOMETRIDAE, S/F: STERRHINAE

Antitrygodes parvimacula

Iron Range Road

G.P.S. 12°44'20.86"S, 143°14'40.26"E.

This is a large species of moth found on Cape York but its range extends from New Guinea to Babinda in Queensland.

The larvae are 'loopers' and probably feed on plants of the Rubiaceae family.





Fig.11

F: NOCTUIDAE, S/F: CATOCALINAE

Erebus crepuscularis

Gordon Creek, Kutini-Payamu (Iron Range) National Park.

G.P.S. 12°42'54.49" S, 143°18'5.19" E.

This very large moth occurs in northern Queensland from Thursday Island to Paluma. The similar *Erebus terminitincta* is found from Eungella to Woolgoolga, N.S.W. It differs from *Erebus crepuscularis* in having a white patch on the costa of the hindwing.

Fig.12

F: ARCTIIDAE, S/F: LITHOSIINAE

Heliosa sp.

Gordon Creek, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°42'54.49" S, 143°18'5.19" E.

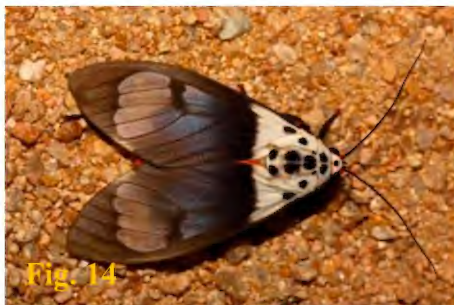


Fig.13

F: CRAMBIDAE, S/F: SPILOMELINAE

Didymostoma aurotinctalis

Portland Roads Road, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°42'58.74" S, 143°18'35.49" E.

This is a medium sized moth and occurs in rainforest from Iron Range to the Cairns area. The transparent wing panels are believed to aid in its protection from predators



by breaking up the shape of the moth, due to green leaf colours passing through the wings.

Fig.14

F: ARCTIIDAE, S/F: ARCTIINAE

Amerila nigropunctata

Portland Roads Road, Kutini-Payamu (Iron Range) National Park

G.P.S. 12°42'58.74" S, 143°18'35.49" E.

There are about six species of *Amerila*, mainly in tropical Australia, although one, *Amerila crokeri* comes into northern N.S.W.

They all exude a strong-smelling acrid yellow froth, from glands near the wing bases, if they are disturbed. This adaptation would offer protection from predators.



Fig.15

F: CRAMBIDAE, S/F: SPILOMELINAE

Desmia discrepans

Gordon Creek, Kutini-Payamu (Iron Range) National Park.

G.P.S. 12°42'54.49" S, 143°18'5.19" E.

Fig.16

F: OECOPHORIDAE, S/F: OECOPHORINAE

Piloprepes aemulella

Portland Roads Road, Kutini-Payamu (Iron Range) National Park

This is a small to medium brightly coloured moth that comes from a very large family of usually drab moths

It was finally photographed after a long chase through heath and open savannah woodland.

Photos Graham McDonald

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A Summer of Butterflies 2014/2015 (aka the Year of the Tiger) -

Peter Hendry

While it does not fit with the Chinese calendar, this summer, in S. E. Queensland, could be described as the Year of the Blue Tiger (*Tirumala hamata hamata*).

Everyone I know has noticed them this summer. Our own president, Ross, has been on the TV news reporting on them and Robert Ashdown has just posted on the club's Facebook page, images of numbers of Blue Tigers nectaring on his Ivory Curl Tree (*Buckinghamia celcissima*). My brother, Quentin, rang last Saturday, 31/01/2015, reporting he could not count fast enough to keep up the number of Blue Tigers flying through his property, just south of Childers. Good rain has produced lots of fresh new growth for the larvae to feed on and has increased the numbers of butterflies across the range. But why so many Blue Tigers?



Fig.1 Blue Tigers aggregating
Photo Pam Thompson

Blue Tigers are known to aggregate overwinter with the females dispersing in spring. Evidence of such aggregations was provided to me by Pam Thompson, a friend of my brother, in an image, (Fig. 1), taken on the Bargara/Mon Repos trail on 7th July 2014. While I have no information on the numbers present, based on the image they must have been in their hundreds. Also present in the image is the odd Common Crow (*Euploea core*). It is the females from such overwintering sites combined with lots of rain-driven fresh new growth on their host plants, mainly Corky Milk Vine (*Secamone elliptica*), that has provided us with such a spectacle of Blue Tigers over this summer.

Blue Tigers are not the only butterfly to benefit from this season's summer rains. A phone call from club member Richard Zietek, informing me he had seen a Four-

barred Swordtail (*Protographium leosthenes*) in his yard at Capalaba, sparked my interest. I live in the adjoining suburb of Sheldon and had only once seen a Four-barred Swordtail here and as I was planning a trip to my bush block, west of Bundaberg, where I had seen Swordtails in numbers once before, things were looking good. The following week a Swordtail made an appearance here at Sheldon and over the summer I have had two other visitors.



The trip to my bush block proved eventful. Accompanied by my brother, skirting around the northern side of Good Night Scrub, expecting, as on previous occasions, to see a few butterflies mud puddling, we were stopped in our tracks. Hundreds if not thousands of Yellow Albatrosses (*Appias paulina*) were mud puddling along the side of the road (Fig. 2). From there until we reached our block, on the Perry River,



Fig. 2 Yellow Albatrosses (*Appias paulina*) mud puddling along the side of the road
Photo Peter Hendry

everywhere there was a puddle there were Yellow Albatrosses. Noticeably 99% of them were males (Fig. 3) with only the occasional female. As for Four-barred Swordtail, on the whole of the trip including the return trip the total numbered was seven, six on the block and one coming home. Yellow Albatrosses were dominate, for every Blue Tiger, a hundred Yellow Albatrosses, for every common Crow a hundred Yellow Albatrosses. They were even mud puddling on the edge of the Perry

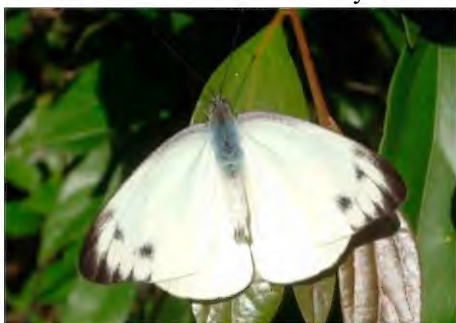


Fig. 3 Male Yellow Albatross
Photo Peter Hendry

River at the bottom of our block. On a walk down to the River we were amazed at the number of larvae, mostly moth larvae, feeding on all the trees. I collected some *Opodiphthera astrophela* larvae feeding on both Crows Ash (*Flindersia Australis*) and Red Ash (*Alphitonia excelsa*), a moth I had not recorded from the block before. Meanwhile back at Sheldon the Blue Tigers while not in large numbers are more numerous than any other year I can remember. Unfortunately there is no



evidence that they have found my *Secamone elliptica*, which remains uneaten. Yellow Albatrosses are also present and have taken up residence in the back yard where they enjoy hiding amongst the trees. While they have been here in the past I do not see them every year. I have three specimens of their host plant *Drypetes deplanchei* but for some inexplicable reason none have produced new growth this summer and I have found no evidence of the Yellow Albatross breeding.

The Common Crow is here as usual but not in any increased numbers. One has just laid an egg on my wife's new Dwarf Frangipani (*Plumeria pudica*) - best I not tell her - interesting to see if it goes through. The Plumbago Blue (*Leptotes plinius*) has increased in numbers, hundreds of them, with their exotic host plant, *Plumbago auriculata*, now covering about 10m² and the native *Plumbago zeylanica* running riot along the ground, they have plenty to feed on.

Other butterflies I have seen here in increased numbers this summer are the Blue Triangle (*Graphium sarpedon*) and the Orchard Swallowtail (*Papilio aegaeus*), though mostly males. It is hard to say if the Lemon Migrant (*Catopsilia pomona*) is in increased numbers but there are plenty here. In lesser numbers have been the Pale Triangle (*Graphium eurypylus*), though I have seen a yellow morph and the Purple Crow (*Euploea tulliolus*), of which I only ever have a few but to date only two.

Peacock or Green Carpenter (*Xylocopa*, formerly in genus *Lestis*) - Erica Siegel

Xylocopa bombylans is found along the coast from Sydney to Cape York and *X. aeratus* is found around Sydney, on the Dividing Range up to approximately the Stanthorpe area.

The female of these spectacular bees is a glossy metallic blue with purple tints and the male a metallic green with yellow tints. Peacock/Green Carpenter bees are 13 to 20mm long.

The face of the female *Xylocopa bombylans* has green and white hairs. Males of *X. bombylans* have white markings while males of *X. aeratus* have yellow face markings.

With their mandibles Peacock Carpenter bees cut 7 to 10mm wide nest burrows in the flower stalks of grass trees (*Xanthorrhoea*) or in the soft pithy dead



Female *Xylocopa bombylans*



timber of *Banksia*, *Tristania*, *Acacia*, *Leptospermum* and *Casuarina*. The Peacock Carpenter bees remove excavated wood from the nest by sticking the end of their abdomen out of the entrance hole and then, with their legs, throwing out the wood particles.

They make rounded cells for their eggs. Each cell is stocked with pollen and nectar formed into “bee bread” before the female lays a large egg on top. She then closes the cell with a plug of chewed wood particles.

According to Dr. Katja Hogendoorn (University of Adelaide) the emerged young bees are fed in the nest and take quite some time before venturing out of the nest. I have observed them placing their abdomen into the entrance hole to excrete digested meals to the outside so not to soil the nest.

The nest burrow may be shared by males and females to help guard the nest. Peacock Carpenter bees are buzz pollinators and “buzz pollinate” by grasping the flower and vigorously vibrating their flight muscles, thus sonicating the flower. This is important for flowers where the pollen is trapped in narrow tubes. Peacock Carpenter bees are attracted to flowers needing “buzz pollination” such as *Hibbertia scandens*, *Melastoma affine* and *Solanum jasminoides*. They also forage in Pea flowers like native *Pultanea* sp., *Gompholobium* sp., and other natives such as *Eriostemon australasius*, (Pink Wax Flower) *Leptospermum*, *Macadamia*, native *Wisteria*, *Senna* sp., *Leucopogon* as well as exotic *Cuphea* among others.

Nectar-foraging Peacock Carpenter bees often pierce the corollas of long-tubed flowers, and thereby reach the nectar without contacting the anthers. Such “nectar stealing” has been observed for *X. bombylans* feeding on *Cuphea* sp.. This would lead to a reduction in pollination.

When foraging among flowers the Peacock Carpenter bees emit a deep droning sound and are therefore easily located.

Land clearing has caused the loss of these stunning bees from Victoria and mainland areas of South Australia although they can still be found on Kangaroo Island in South Australia.

Photos Erica Siegel

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<http://australianmuseum.net.au/Peacock-Carpenter-Bee>





Fig.1



Fig.2



Fig.3



Fig.4

Figs.1 and 3 Peacock Carpenter bee (*Xylocopa bombylans*) female
 Fig. 2 Peacock Carpenter bee male Fig.4 Ejecting wood particles

New Distribution Records for Nymphalid Butterflies (Lepidoptera: Nymphalidae) in Queensland - *Kelvyn L. Dunn*

Summary

This paper documents 53 new locations in inland, outback and central Queensland, Australia, for 17 species of nymphalid butterflies. Each record is from a location that falls outside the boundaries of the species' distributions, as indicated on the range-filled maps provided by Braby (2000). The report also discusses relevant new locations discovered by others since 2000, namely those that lie close to any listed in this paper, but in doing so it does not reiterate historic distributions that underpin Braby (2000). The many new locations for the species tabled provide ongoing evidence that there remains much to learn about butterfly species' distributions, especially in western Queensland.



Introduction

Those insect enthusiasts who occasionally visit remote areas of Queensland may pay little attention to the nymphalid butterflies a group comprising a number of subfamilies whose members are usually very conspicuous on the wing. The casual naturalist, familiar with butterflies and when equipped with a suitable field guide, can readily identify most of those seen at close to moderate range, as many of the species have striking differences. Others, so inclined, with a growing field expertise can effortlessly photograph the adults and easily identify them by this means, or may choose to seek assistance to that end from those with more experience. Photography is easiest when adult butterflies pause to feed at flowers or when they roost on low foliage in the evenings or, at other times, during unsuitable weather for sustained flight. Both means of data gathering will provide quality records for the species that occur in Queensland, save some from a few complex groups like the Crow butterflies where specimens may be required, particularly in the far north of the state, to eliminate doubt that may arise at times.

Regular observations by casual observers have built up a substantial knowledge of the distributions of nymphalid butterflies because their members, like those of the Swallowtails (Papilionidae) and Whites and Yellows (Pieridae) (see Dunn 2013a, & 2014 for complementary pieces on these groups), are conspicuous in areas where they occur. Despite their moderate size and visibility, the known distributions for some of the more widespread and common species are still patchy, fragmentary, and likely under-representative beyond the coastal and sub-coastal regions where most butterfly fieldwork is repeatedly done (Dunn 2010). That paucity of knowledge applies especially to species that periodically disperse inland along major river systems (from moister upland regions of the western slopes of the Great Dividing Range in eastern Australia), or from floristically richer regions nearer the eastern coast after traversing the range. It is possible that *Yoma sabina* (the Lurcher) is one of those species that expands inland along river systems (to a limited extent) during the wet season (or farther afield in those more favourable years) where at other times it is less likely to be found, or is not present. At such times, it may breed seasonally or opportunistically on plants belonging to the family Acanthaceae to create meta-populations. The surprising record of this species in the Chillagoe area, notably distant from other eastern locations, would support this suggestion, but adults have been seen only at limited times of the year, albeit often commonly. Garry Sankowsky (p.c. 2014) who knows the area informed me that, “The main host plant there is *Dipteracanthus australasia* and it is quite abundant in most of the vine thickets on the bluffs all around Chillagoe. They also use *Brunoniella australis* which grows outside of the vine thickets, but *Yoma* does not venture too far from the vine thickets/rainforest.”

Methods

During several lengthy field trips through inland and northern Queensland (see Dunn 2013b for map of sites visited in 2011 & 2012), I pragmatically recorded Nymphalids (and all other butterflies) in order to help alleviate the knowledge imbalances that



exist for the inland of northeastern Australia (Dunn 2009, 2010). I utilised a roadside explorative approach that involved examination of numerous sites along major inland highways and byroads, on route to and from the Gulf Country in 2011-12 and to and from southern Cape York Peninsula, along the coastal route, in 2001-02. I chose sites according to the various types of habitat available and where these habitats showed less human disturbance, in order to maximise the number of species seen. The procedure involved slowly walking through each site visited (often involving a 15-30 minute inspection), and in process listing all species encountered that could be positively identified by various means (netting, photography and close visual observations) on all four trips. Most inspections occurred between 0900 and 1730h (AEST) each day for the entirety of each trip, usually irrespective of the weather (if only marginally unsuitable) as adults might still be found by disturbing them from roosting sites, but with an obvious focus on sunnier periods to maximise encounter rates with adults (the main life stage sought).

I identified many of the adults seen without the requirement of handling; least interference has been the option aimed for over the years, where the record was thought (at the time) to be mundane. Those forty (40) encounters (65.6%) recorded by 'observation-only' are marked (**Obs.**). For 39 (97.5%) of these observations the identifications were certain (Category 1). In each case, I recognised sufficient characters to achieve that level of confidence. Only one observation was to a level of 'almost certain' (Category 2) as the field circumstances did not permit sufficient time and closeness to identify the species to a level beyond reasonable doubt on that occasion (see Dunn 2011 for discussion of this category and other categories of record acceptability). That particular record (which involved *Junonia orithya*) is marked 'C2' to distinguish it as less reliable as observations go; nonetheless the new distribution it suggests is well supported by neighbouring records (see Table and a relevant reference linked to the species concerned) so there seems little concern by its inclusion.

I retained voucher specimens at times (where this was permissible and achievable), and more often than not, these were taken from locations where the species concerned were far beyond their known ranges. For that reason, the percentage of vouchers in the Table (24.6%) is higher than the usual frequency for all records on the trips concerned (because the table is selective data and lists only those records that represent new locations). Sometimes vouchers ought to have been taken to help improve the survey rigour, when in fact they were not; the main reason being was that on many occasions I did not recognise that a particular location was evidence of new distribution at the time of the field encounter. Occasionally too, a compromise was struck, and some adults suspected of being from new or perhaps cusp locations were caught and examined to confirm their identification (to strengthen a record that might be challenged) and then released (**Rel.**) (4.9%). A very small portion of records was photographed in the field (4.9%) where this was practicable; these serve as supportive evidence that can be examined by others, should this be required (some are



reproduced in this report to substantiate those encounters). At times too, I also retained adults that had posed for video photography (the imagery means utilised), if they lingered unduly (but oftentimes they would quickly depart on my closer approach); these are included among those marked as **vouchers**, but each includes a superscript-link to the photos (video frames) concerned. Records that standalone as image-only (meaning the specimens were not retained as vouchers) are marked as **‘Photo’** (0.6%).

The method used to measure distances, and define locations to precision of within a kilometre of the actual site, has been described previously (Dunn 2013c); extended discussion and other recommendations to help describe locations effectively and, in process, to avoid ambiguity are detailed elsewhere (Dunn 2013d) and not reiterated.

Results and Discussion

The table lists 61 records of 17 species from 53 new locations (arranged from north to south), across Queensland; all sites fall outside the boundaries defined by Braby (2000) for the species concerned and so are new on that criterion. References to findings of other workers in the last decade or so are cross-linked where their published new locations fall close to those listed. For *Melanitis leda* the new record from the Gulf Country hinterland provides evidence of what may be a continuous distribution through the coastal region of northern Australia. Similarly, the records of *Mycalopsis perseus*, *Charaxes sempronius*, *Acraea andromacha*, *Junonia orithya*, *J. hedonia*, *Danaus plexippus* and *D. affinis* from the greater Normanton district add to available knowledge and in doing so, each helps bridge the gap in the eastern Gulf Country for these common and widespread species. The central Queensland record of *Pantoporia consimilis* was a surprising southern encounter (in a region that has been well examined previously), and one that seriously challenged my predatory stealth (in absence of the proverbial net) as I homed in to photograph the single adult, which was basking in a sunlit vine thicket. The dense tangle of vines which tredding upon immediately disturbed higher foliage in the vicinity, alerted it as to my approach each time, and prompted a routine leisurely glide, with intermittent flutter, back and forth in the small glade. It remained site tenacious and often chose to perch at a moderate height, which when I was eventually close to it was just a little too high above my head for a suitable view from below – a stepladder would have been handy!

For the other nymphalid species, some of the extensions recorded may be minor but each provides evidence of a broader inland occurrence in the area concerned. Most of these new records link in to an inadequate knowledge of species’ distributions – due to a lack of regular exploration of the inland by insect enthusiasts (collectors and photographers) – rather than because of unusual or localised climatic conditions that were present in southeastern Australia for some of the years concerned. Each record adds insight into the distribution of those species of butterfly in the inland, particularly the Gulf Country where much effort focussed, and helps fill knowledge gaps evident in their distributions (as based on the range-fill maps in Braby 2000).



Acknowledgements

I sincerely thank Garry Sankowsky (Queensland) for detailed biological information on *Y. sabina* in the Chillagoe area, and for permission to include his observations in this report to supplement my own records. I also thank Dr Russell Best (Victoria University, Vic.) for identifying (based on photos of flowers and foliage) the nectar source of *H. metirius* at Carnarvon Gorge.

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Key to Table:

Note 1. A solitary adult of *Melanitis leda*, in fairly worn condition and closest in fascies to the dry season form, was flushed from undergrowth in paperbark gallery forest, between 1255-1335h AEST (the duration of survey). Once startled, it flew rapidly but quickly sought shelter amongst leaf litter in an area of deeper shade farther afield, whereafter it was not seen.

Note 2. During three differently timed visits (one in mid-late morning, one in mid-afternoon and another in late afternoon), I walked extensively along the northern riverbank in search of satyrine butterflies. A few aged females of *Mycalesis perseus* were encountered in vine thickets in mid and late afternoon, and another was seen in the morning the next day, which provided evidence of at least one species hitherto unrecorded from the eastern Gulf Country. However, I did not find evidence of *M. terminus* at this location, a riparian site where I thought the species might occur if suitable larval food plants are present. Braby (2000) expressed doubt concerning the authenticity of the single male specimen of *M. terminus* from Normanton in the ANIC, which Dunn and Dunn (1991) had included in the species’ distribution. Braby (2000 p.477) reported that the specimen concerned was “collected by J.C. Le Souef”. I had examined the specimen when it was held in the Le Souef collection at Blairgowrie, and recorded that a certain ‘R. Howard’ (not Le Souef) had collected it on 5 August 1958 (and, from memory, that it was labelled in Le Souef’s handwriting). Data-matching (using Dunn & Dunn database) suggests that R. Howard collected at Mount Isa on the two previous days in August, but there is no evidence (from surviving specimen labels) of his subsequent journey from the Gulf. If he had then travelled to the eastern coast of Queensland this could explain its origin, assuming the label data is mistaken. The *M. terminus* record does seem doubtful (there is no other evidence of it from the Gulf area at this time), but there might be



suitable habitat about greater Normanton where the species could exist; hence Braby's call for confirmation still stands.

Note 3. There were a few adult *Ypthima arctoa* flying in a vacant residential block in the main street between 1255 and 1400h AEST, at 20°46'10"S, 145°01'16"E; some were seen to feed at flowers of *Tridax procumbens* (Asteraceae) growing near a water tank. I was a little surprised to see this butterfly in the township (where it was locally common) as none had been seen in the woodland areas inspected in the Prairie district to the west, nor (later) in the woodland in the Burra Range area to the east. Nonetheless, the species occurs in the nearby White Mountains National Park (Atkins et al. 2003), and within which the Burra Range is included, and it has, on one occasion, been taken farther west at Koon Kool (station), 25km NE of Hughenden (Kendall 2011).

Note 4. A male *Hypocysta metirius* was photographed feeding repeatedly at flowers of *Lobelia trigonocaulis* (Campanulaceae), at 1540h AEST (Figure 2 & 3), alongside feeding adults of *H. pseudirius* (Figure 4), a species very similar in appearance. Both species were localised and co-occupied the same shady areas in riparian grassy woodland where they perched on low foliage, but the flight of *H. metirius* is swifter, which drew my attention to it for a closer inspection. *H. metirius* occurs elsewhere in the Carnarvon Range, "some 95km south of Rolleston, 75km north of Injune" at 25°14.6'S, 148°37.6'E (Valentine & Johnson 2001) but was hitherto unknown from the Carnarvon Gorge.

Note 5. In the Gulf Country of western Qld, *Charaxes sempronius* has been recorded at Hedleys Gorge and Hells Gate Roadhouse (Franklin 2007); the new encounter adds to these earlier reports and provides for a broader distribution.

Note 6. A small male *C. sempronius* was seen to feed at sandy mud (near the water's edge) on a large sandbar in the Flinders River at 1325h AEST. I have not seen this species seeking nutrients at mud before (that I can recall), but because of the presence of large crocodile tracks which led directly to the waters' edge, near where the butterfly was, I did not linger unnecessarily in the area for a timely photograph to capture this interesting behaviour. Instead, I swiftly netted the adult (using a net with a long extendable handle) and subsequently placed the butterfly on wet sand under artificial lighting that evening; he commenced to feed again and so posed for the photograph provided herein (Figure 6), suitably representative of the actual activity observed in the field that day.

Note 7. This cusp record of *Acraea andromacha* is certainly not the first from the Lawn Hill area but is additional evidence of the species' presence at or near



the western boundary of its irregular occurrence (as estimated from the synoptic map presented by Braby (2000)). Daniels and Edwards (1998) listed it from Lawn Hill National Park and Musselbrook Reserve, and more recently, Franklin (2007) encountered it in the 'Main Gorge area' of Lawn Hill N. P. The species may be regular (rather than irregular) in the Lawn Hill region.

- Note 8.** An adult of *A. andromacha* was seen roosting in shade on a small rocky knoll in shrubby woodland, during very hot weather (between 1505 and 1525h AEST), judged as "probably 40°C" according to my field note book; it reached 39°C in Mt Isa that day.
- Note 9.** This encounter adds to the earlier report by Pierce (2008) who recorded the species at Fullarton (as 'Fullaton') River, west of Julia Creek (township).
- Note 10.** This record of *A. andromacha* is not the first from this area but is additional evidence of its presence; Atkins et al. (2003) included the species in a list from the Warang Homestead area and nearby gorges of the White Mountains National Park, marginally to the east. Atkins' personally surveyed during a scientific expedition in April 2000 (and recorded the species on that particular visit), but that paper included records of this species from other visits (attributed to three other workers), which came from either the gorge area or Burra Range, or both.
- Note 11.** Several adults were seen to feed at a large 'cedar tree' in parkland, near an entrance to a caravan park, between 1215 and 1230h AEST. It is possible that the ornamental garden tree in the camping area, which served as a nectar source for this and other species, was a native; and if so, it may have been a White Cedar, *Melia azedarach* (Meliaceae). Queenslanders might generically call such a 'cedar tree' (the name provided locally), but I did not take any photos of the flowers to enable a reliable identification by a botanical expert. This encounter adds to the earlier report by Valentine and Johnson (2000) who recorded the species on Baldy Top Lookout, 5km west of Quilpie, a location that provided a considerable westward extension of range (and is west of this record from the township of Charleville).
- Note 12.** Two adults of *Neptis praslini* were seen on the summit (one was taken). This encounter adds to the earlier report by Monteith (1971) who recorded the species from Coen; Braby (2000) referred to that information informally (by contributor name only). Mount White, which is situated to the southwest of Coen, is a cusp location based on its meridian of longitude; it appears to be just on the outer edge of the range-fill area, as estimated from the synoptic map provided by Braby (2000) and is important in defining the western limits (as known at this time) on Cape York Peninsula.



Note 13. This is a cusp record, marginally outside the distribution figured by Braby (2000), and is important in defining the western limits in Dawson region, central Qld.

Note 14. This cusp location is just outside the range-fill area on the synoptic map provided by Braby (2000) and is arguably new on that reasoning. Curiously, I cannot find a record of *Doleschallia bisaltide* in my field notes from this location (written on the day concerned), nor do I have a photo or video footage of it, but it is included in the database and was presumably this species. It may have been preserved in ethanol and could be in the VAIC, Bundoora or ANIC, Canberra. As the larva was not reared, and a said, 'voucher' is currently unaccounted for (perhaps lost now), I call for visiting enthusiasts to gather further evidence of the species at or near this location and from elsewhere on western Cape York Peninsula to improve knowledge of this species' northern distribution.

Note 15. Three adults were seen in vine thicket on the southern side of the road, more finely, 'about 4.5km' (measured by road) from Chillagoe. Details of the underwing markings, which were not recorded in my field notes (and may not have been seen), are unclear; it is likely they resembled those adults from the Wet Tropics region, which are usually dark (unlike some I have seen in the hinterland of Cape York Peninsula, which have a prominent pale band). This report is not the only one I know of from the area; G. Sankowsky has seen the species at a number of sites in the Chillagoe region, for example, and recently provided evidence of an adult in a video of overwintering Crow butterflies circulated among members of the BOIC. I contacted G. Sankowsky and he kindly supplied information on the species regularity in the area: "The Lurcher is quite common at Chillagoe in the wet season ... (particularly) in the vine thickets on the limestone bluffs. In February they can usually be seen at any bluff where the host plant grows." He reported the species occurs as far west as 3km SE of Mungana at 17°08.5' 144°25.5' (which extends the distribution farther west than does my record).

Note 16. Pierce (2008) earlier recorded *Junonia orithya* from Karumba. My records, which include encounters at Walker Creek and near the Wondoola airstrip (as per the table) collectively support that previously published location and another from the Flinders River crossing, south of Normanton, reported in the same paper.

Note 17. This western record of *J. orithya*, albeit well outside the distribution indicated on the synoptic map presented by Braby (2000), is not the first from the Lawn Hill area but is additional evidence of the species presence in the eastern Gulf Country. Daniels and Edwards (1998) listed it from Lawn Hill National Park and Musselbrook Reserve, and subsequently, Franklin (2007) finely recorded it from the 'Main Gorge area' (Lawn Hill N. P.).



Elsewhere in western Qld, Franklin (2007) listed it from the Nicholson River, and more remotely to the south, along a tributary of the Thornton River.

Note 18. Pierce (2008) recorded *J. orithya* from the Burke & Wills Roadhouse; the new records from this general area (Table 1) are supportive of his earlier report and considerably expand upon it.

Note 19. One adult of *Danaus affinis* fed in company with a female of *Ogyris amaryllis* (Lycaenidae) at a red flowering bottlebrush (*Callistemon* sp. perhaps *viminalis*) in parkland/residential area, at 1150h (AEST).

Note 20. A single adult was seen at the ‘40km roadside marker’ (which, based on the GPS reading to seconds, obtained at the site with a hand-held device measured 39.6km by road on Google Earth (Google Inc.)). Since my encounter in October 2012, which was the first for the Gulf Country of northwestern Qld, Braby (2014, p.38) has recorded the species from six more sites in the region, during May 2013, and remarked that, “at Karumba, QLD, many adults were seen”. Current evidence suggests the species is vagrant to the Gulf Country.

Note 21. Although *Euploea corinna* is a widespread species in the inland in western Qld, this cusp record, which is marginally outside the distribution figured by Braby (2000), importantly helps define the western limits at this latitude in the Thomson region.

Note 22. This is a cusp record, marginally outside the distribution figured by Braby (2000), and is important in defining the western limits in the Warrego region.

Table - 53 new locations for species of Nymphalidae from beyond their known ranges in Australia

Species/Location	State	Geocode	Date	Format
<i>Melanitis leda</i> Gregory River crossing, at Gregory Downs	Qld	18°39’S, 139°15’E	10 Oct 2012	Obs ^{Note 1}
<i>Mycalesis perseus</i> Walker Creek crossing, 28km NNE of Normanton	Qld	17°28’S, 141°11’E	13 Oct 2012 14 Oct 2012	Voucher ^{Note 2} Obs
<i>Ypthima arctoa</i> Torren Creek (township)	Qld	20°46’S, 145°01’E	28 Oct 2012	Voucher ^{Note 3, Fig 1}
Belyando Crossing <i>Hypocysta metirius</i>	Qld	21°32’S, 146°51’E	06 Nov 2011	Voucher
Carnarvon Gorge, Carnarvon NP at 25°03’03’’ 148°13’00’’	Qld	25°03’S, 148°13’E	11 Nov 2011	Photo ^{Note 4, Fig 2&3}



Hypocysta pseudirius

Tambo, in hotel rear garden	Qld	24°53'S, 146°15'E	26 Oct 2011	Voucher ^{Fig 5}
Augathella, at Warrego River ford at 25°47'43" 146°34'48"	Qld	25°48'S, 146°35'E	01 Oct 2012	Voucher
Tregole NP, in car park	Qld	26°30'S, 147°08'E	30 Sep 2012	Obs

Charaxes sempronius

Lawn Hill NP, Constance range at summit lookout	Qld	18°42'S, 138°30'E	25 Oct 2012	Obs ^{Note 5}
Flinders River, at 60km SSW of Normanton	Qld	18°10'S, 140°51'E	12 Oct 2012	Voucher ^{Note 6, Fig 6}
Wyandra (in hotel rear garden off Warrego Street)	Qld	27°15'S, 145°59'E	27 Sep 2012	Obs
1km S of Cunnamulla (at van park)	Qld	28°05'S, 145°41'E	27 Sep 2012	Obs

A. andromacha

Normanton, at drain near Travers Street	Qld	17°41'S, 141°04'E	14 Oct 2012	Rel
Walker Creek crossing, 28km NNE of Normanton	Qld	17°28'S, 141°11'E	14 Oct 2012	Obs
Lawn Hill Creek, Adels Grove	Qld	18°41'S, 138°32'E	23 Oct 2012	Obs
			24 Oct 2012	Obs
Lawn Hill NP, Constance range at summit lookout	Qld	18°42'S, 138°30'E	25 Oct 2012	Obs ^{Note 7}
8km NW by N of Quamby Hotel, on hill top	Qld	20°19'S, 140°15'E	16 Oct 2012	Obs
			22 Oct 2012	Obs ^{Note 8}
15 km W of Julia Creek	Qld	20°40'S, 141°36'E	08 Oct 2012	Obs ^{Note 9}
Cloncurry Apex Lookout, 2km W of Cloncurry	Qld	20°42'S, 140°29'E	08 Oct 2012	Obs
Cloncurry River anabranh, at 1km W of Cloncurry	Qld	20°42'S, 140°30'E	22 Oct 2012	Obs
Bottle Tree Lookout, 58km NE of Hughenden	Qld	20°28'S, 144°24'E	28 Oct 2011	Voucher ^{Note 10}
Wyandra (in hotel rear garden off Warrego Street)	Qld	27°15'S, 145°59'E	27 Sep 2012	Obs
Augathella, at highway junct.	Qld	25°48'S, 146°36'E	01 Oct 2012	Obs
1.6km NE by E of Charleville	Qld	26°24'S, 146°15'E	30 Sep 2012	Voucher ^{Note 11}

Pantoporia consimilis

Hann River roadhouse, at bridge	Qld	15°12'S, 143°52'E	11 Jan 2001	Obs
Olsens Cave, 3km ENE of The Caves	Qld	23°10'S, 150°29'E	05 Nov 2012	Obs

Neptis praslini

Mount White, near Coen	Qld	13°58'S, 143°11'E	06 Jan 2002	Voucher ^{Note 12}
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Phaedyma shepherdii

Palm Tree Creek, at 19km N of Taroom	Qld	25°30'S, 149°47'E	14 Nov 2011	Obs
Comet, Leichhardt Tree Park	Qld	23°33'S, 148°32'E	08 Nov 2011	Voucher ^{Note 13}



Doleschallia bisaltide

Myall Creek crossing (Pax Piel Bridge) 55km ESE of Weipa	Qld	12°39'S, 142°16'E	07 Jan 2002	Voucher ^{Note 14} (as juvenile)
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Yoma sabina

Little Laura River crossing, 12km WNW of Laura	Qld	15°32'S, 144°21'E	11 Jan 2001	Voucher
5km SE of Chillagoe	Qld	17°11'S, 144°33'E	09 Jan 2002 12 Jan 2002	Obs Obs ^{Note 15}

Junonia orithya

Brannigan Creek, at 31km E of Karumba	Qld	17°27'S, 141°07'E	13 Oct 2012	Obs-c2 ^{Note 16}
Walker Creek crossing, 28km NNE of Normanton	Qld	17°28'S, 141°11'E	12 Oct 2012 13 Oct 2012 14 Oct 2012	Obs Voucher ^{Fig 7} Obs
Flinders River, 21km W of Wondoola airstrip	Qld	18°34'S, 140°43'E	12 Oct 2012	Obs
Lawn Hill Creek, Adels Grove	Qld	18°41'S, 138°32'E	24 Oct 2012	Obs
Lawn Hill NP at 18°42'05" 138°29'24"	Qld	18°42'S, 138°29'E	25 Oct 2012	Photo ^{Note 17}
Lawn Hill NP at 18°41'59" 138°29'39"	Qld	18°42'S, 138°30'E	25 Oct 2012	Photo ^{Fig 8}
Indarri Falls Lawn Hill NP	Qld	18°43'S, 138°29'E	24 Oct 2012	Obs
Lawn Hill NP at 18°43'04" 138° 28'59"	Qld	18°43'S, 138°29'E	24 Oct 2012	Obs
55km NW by W of Burke & Wills Roadhouse	Qld	18°56'S, 139°58'E	10 Oct 2012	Obs
38km WNW of Burke & Wills Roadhouse	Qld	19°03'S, 140°02'E	23 Oct 2012	Obs
Burke & Wills Roadhouse	Qld	19°14'S, 140°21'E	15 Oct 2012	Obs ^{Note 18, Fig 9}
Dismal Creek crossing, 4km ESE of Burke & Wills RH	Qld	19°15'S, 140°22'E	01 Nov 2011	Rel

Junonia hedonia

Walker Creek crossing, 28km NNE of Normanton	Qld	17°28'S, 141°11'E	12 Oct 2012 13 Oct 2012 14 Oct 2012	Voucher ^{Fig 10} Obs Rel
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Danaus affinis

1km NE by N of Karumba	Qld	17°27'S, 140°50'E	13 Oct 2012	Obs ^{Note 19}
Point boat ramp				
Walker Creek crossing, 28km NNE of Normanton	Qld	17°28'S, 141°11'E	13 Oct 2012	Obs
Normanton, in Simpson St	Qld	17°40'S, 141°05'E	14 Oct 2012	Obs
6km ENE of Burketown, at creek	Qld	17°44'S, 139°35'E	11 Oct 2012	Voucher

D. plexippus

40km NNE of Burke & Wills Roadhouse	Qld	18°53'S, 140°28'E	12 Oct 2012	Obs ^{Note 20}
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Euploea corinna

16km W by S of Blackall (along road to Isisford)	Qld	24°27'S, 145°20'E	03 Oct 2012	Obs ^{Note 21}
Tambo, in hotel rear garden	Qld	24°53'S, 146°15'E	26 Oct 2011	Obs ^{Note 22}
Augathella, at Warrego River ford at 25°47'43" 146°34'48"	Qld	25°48'S, 146°35'E	01 Oct 2012	Obs

Photos Kelvyn Dunn

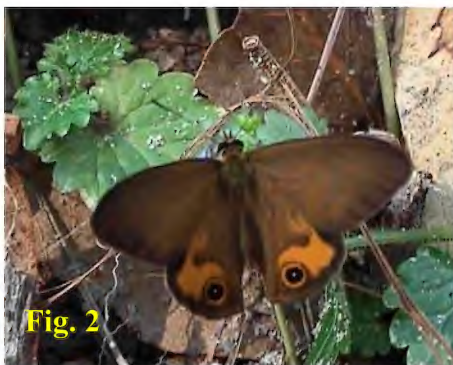


Fig.1. *Y. arctoa* male (ventral view) perched at Belyando Crossing; specimen deposited in ANIC, Canberra.
Fig.2. *H. metirius* male (dorsal view) feeding at *Lobelia trigonocaulis* (Campanulaceae) at Carnarvon Gorge,
Carnarvon National Park.
Fig.3. *H. metirius* male (ventral view) feeding at *L. trigonocaulis* at Carnarvon Gorge.
Fig.4. *H. pseudirius* aged male (ventral view) feeding at *L. trigonocaulis* at Carnarvon Gorge



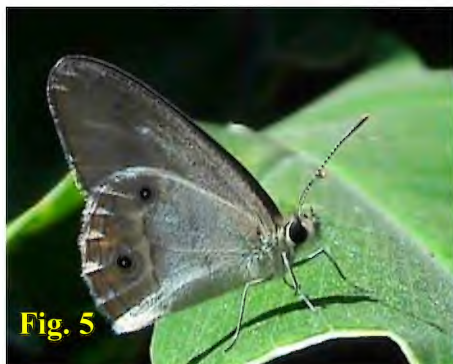


Fig. 5

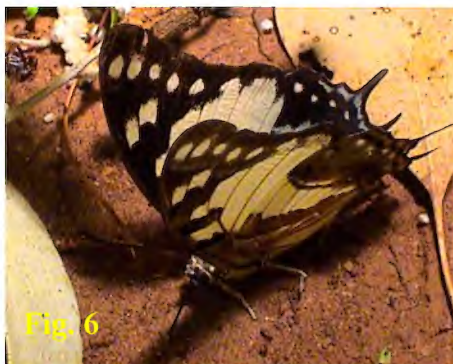


Fig. 6



Fig. 7

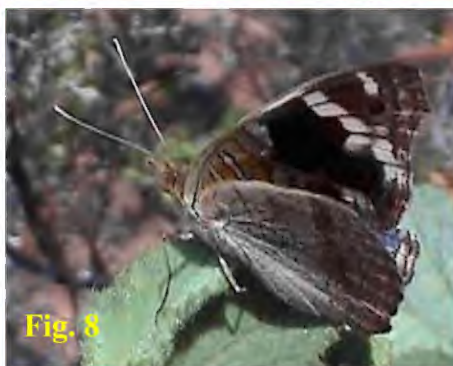


Fig. 8

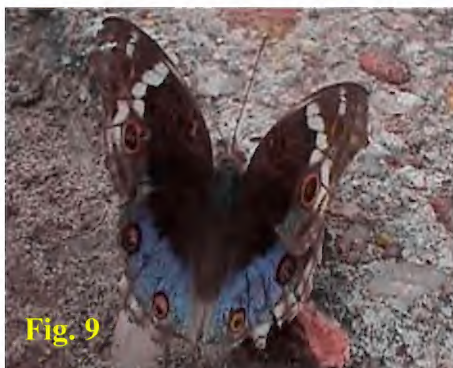


Fig. 9

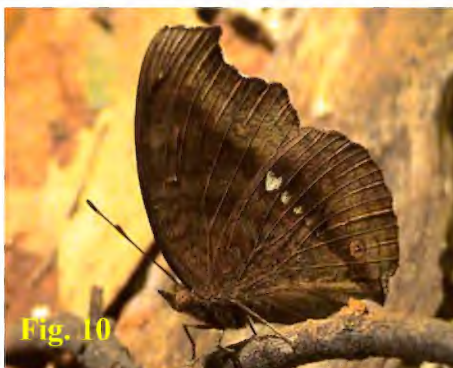


Fig. 10

Fig.5. *H. pseudirius* fresh conditioned male (ventral view) perched at Tambo, in hotel rear garden.

Fig.6. *C. sempronius* at Flinders River crossing, 60km SW of Normanton, feeding at mud (video recorded in captivity; specimen deposited in ANIC, Canberra).

Fig.7. *J. orithya* male (dorsal view) basking at Walker Creek, 28km NNE of Normanton.

Fig.8. *J. orithya* battle scarred male with severed forewing (ventral view) perched at Lawn Hill National Park.

Fig.9. *J. orithya* aged female (dorsal view) perched at Dismal Creek crossing, 4km ESE of Burke & Wills Roadhouse.

Fig.10. *J. hedonia* male (ventral view) roosting at Walker Creek, 28km NNE of Normanton; specimen deposited in ANIC, Canberra.



OMISSION

New Distribution Records for Sulphur and White Butterflies (Lepidoptera: Pieridae) in inland and outback Australia – Kelvyn L. Dunn, December 2014 issue of Metamorphosis Australia, #75. The column “Format” in the Table was inadvertently omitted from the article when transferring it to the magazine which meant that the numbered biological notes could not be cross-referenced to the particular records they concerned. The replacement Table is reproduced below.

Table - Forty-nine new locations for species of Pieridae from beyond their known ranges in Australia

Species/Location	State	Geocode	Date	Format
<i>Catopsilia pyranthe</i>				
Bladensburg historic homestead, at woolshed	Qld	22°30’S, 143°02’E	06 Oct 2012	Obs
1.6km NE by E of Charleville	Qld	26°24’S, 146°15’E	28 Sep 2012	Obs
			30 Sep 2012	voucher ^{Note 1}
Bogan River bridge, at 1.3km NW by W of Nyngan	NSW	31°33’S, 147°11’E	16 Dec 2013	Obs
95km N by W of Condobolin	NSW	32°19’S, 146°58’E	16 Dec 2013	Obs-C2
<i>C. pomona</i>				
Muttaborra	Qld	22°36’S, 144°33’E	04 Oct 2012	Obs
Aramac, N of Barcaldine	Qld	22°58’S, 145°14’E	04 Oct 2012	Obs
1km S of Barcaldine	Qld	23°34’S, 145°17’E	04 Oct 2012	Obs
Isisford	Qld	24°16’S, 144°26’E	03 Oct 2002	Obs
Blackall	Qld	24°26’S, 145°28’E	02 Oct 2012	Rel
16km W by S of Blackall (along road to Isisford)	Qld	24°27’S, 145°20’E	03 Oct 2012	Obs ^{Note 2}
24km NW by rd of Tambo	Qld	24°45’S, 146°06’E	26 Oct 2011	voucher
Tambo	Qld	24°53’S, 146°15’E	02 Oct 2012	Obs
18km N of Augathella	Qld	25°39’S, 146°36’E	01 Oct 2012	Rel
41km NNE of Charleville	Qld	26°06’S, 146°25’E	01 Oct 2012	Obs
1.6km NE by E of Charleville	Qld	26°24’S, 146°15’E	30 Sep 2012	Obs
11km S by W of Charleville	Qld	26°29’S, 146°13’E	25 Oct 2011	Obs
12km S by W of Charleville	Qld	26°30’S, 146°12’E	25 Oct 2011	Obs
25km S by W of Charleville (at 4km N of Angellala Creek)	Qld	26°37’S, 146°10’E	25 Oct 2011	Obs
<i>Eurema laeta</i>				
Walker Creek, at 28km by road NNE of Normanton	Qld	17°28’S, 141°11’E	12 Oct 2012	voucher
			13 Oct 2012	voucher
			14 Oct 2012	Rel
Normanton, at drain near Travers Street	Qld	17°41’S, 141°04’E	12 Oct 2012	voucher ^{Fig 1}
			14 Oct 2012	Rel



E. herla

Craggs grave, 27km SSW by road of Winton	Qld	22°34'S, 142°57'E	06 Oct 2012	Obs
Surprise Creek, at Top Crossing, at southern boundary of Bladensburg National Park	Qld	22°34'S, 142°58'E	06 Oct 2012	Photo Note 3, Fig 2

E. smilax

27km E of Norseman	WA	32°05'S, 122°01'E	10 Oct 2008	Voucher
13km N of Scaddan (at Truslove Road junction)	WA	33°19'S, 121°42'E	15 Oct 2008	Obs

E. hecabe

1.6km NE by E of Charleville post office (at van park)	Qld	26°24'S, 146°15'E	30 Sep 2012	voucher ^{Note 4}
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Elodina parthia

Bottle Tree Lookout, 58km NE of Hughenden	Qld	20°28'S, 144°24'E	28 Oct 2011	Voucher ^{Note 5}
18km SE by E of Winton, in cleft on mesa	Qld	20°29'S, 143°11'E	05 Oct 2012	Voucher ^{Note 6}
24km NW by rd of Tambo	Qld	24°45'S, 146°06'E	26 Oct 2011	Voucher ^{Fig 3}
25km SE of Tambo, at highest point on road	Qld	25°01'S, 146°26'E	02 Oct 2012	Voucher ^{Fig 4}
Tara River, at Hebel	Qld	28°58'S, 147°48'E	17 Nov 2011	voucher Note 7, Fig 5

El. walkeri

Chillagoe	Qld	17°09'S, 144°31'E	12 Jan 2002	Voucher
5km SE of Chillagoe	Qld	17°11'S, 144°33'E	12 Jan 2002	Photo ^{Fig 6}

Cepora perimale

11km N by E of Roma	Qld	26°28'S, 148°48'E	14 Nov 2011	voucher ^{Fig 7}
10km SE by S of Hebel	NSW	29°02'S, 147°52'E	17 Nov 2011	voucher ^{Note 8}

Delias argenthona

Walker Creek, at 28km NNE of Normanton	Qld	17°28'S, 141°11'E	14 Oct 2012	Obs
1km S of Barcaldine	Qld	23°34'S, 145°17'E	04 Oct 2012	Obs
Barcoo River bridge, Isisford	Qld	24°16'S, 144°27'E	03 Oct 2012	Obs
Barcoo River at 42km ESE of Blackall	Qld	24°35'S, 145°49'E	02 Oct 2012	Voucher Note 9, Fig. 9
25km NW by rd of Tambo	Qld	24°45'S, 146°06'E	02 Oct 2012	Obs
Tambo	Qld	24°53'S, 146°15'E	01 Oct 2012	Obs
29km NNE of Charleville	Qld	26°11'S, 146°22'E	30 Sep 2012	Voucher ^{Fig.10}
1.6km NE by E of Charleville	Qld	26°24'S, 146°15'E	30 Sep 2012	Obs
Wyandra (in hotel rear garden off Warrego Street)	Qld	27°15'S, 145°59'E	27 Sep 2012	Photo ^{Fig.11}
1km S of Cunnamulla (at van park)	Qld	28°05'S, 145°41'E	27 Sep 2012	Rel
Darling River at Bourke, near Short St (close to Rotary Park)	NSW	30°05'S, 145°57'E	26 Sep 2012	voucher ^{Note 10}



D. aganippe

39km E of Isisford	Qld	24°16'S, 144°48'E	03 Oct 2002	Obs ^{Note 11}
16km W by S of Blackall	Qld	24°27'S, 145°20'E	03 Oct 2012	Rel
24km NW by rd of Tambo, at picnic area	Qld	24°45'S, 146°06'E	02 Oct 2012	voucher ^{Note 12}
Beacon Hill Lookout, 1.6km E of Norseman	WA	32°12'S, 121°49'E	10 Oct 2008	Obs
			13 Oct 2008	Obs

Brown Stag Beetle (*Rhyssonotus nebulosus*) in Brisbane –

Hongming Kan

One day in late 2008 in Yugarapul park, I accidentally stepped on a rotten tree trunk lying in the bush and snapped it while chasing a beautiful butterfly near the Bulimba creek. I found a pair of Brown Stag beetles inside the broken tree trunk. That was the first time I had a close encounter with the amazing beetles and learnt the existence of such creature. However, after that day and until a few days ago (15 Dec, 2014), I never had another chance to see them again despite the fact they are common in Queensland.

I am a big fan of beetles and the desire to get my hands on the brown stag beetles again gnawed at me. With a few weeks' holidays to spend on my hobbies at the end of the year, my hands were becoming itchy and I felt it was the right time to try my luck again. Before I started, I did some googling on the Brown Stag Beetle. From the information gleaned, I learnt they actually live their entire lives inside rotten tree trunks and it felt like a plausible explanation why I hadn't seen them again in so many years. It never occurred to me before that a rotten log was the obvious place to search for the beetles although it was the place where I found them initially. Armed with the knowledge of the beetle's habits, I knew where to look for them this time.

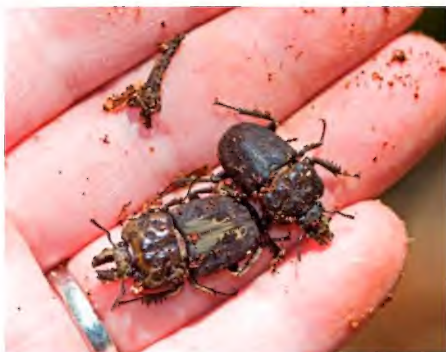


The place where I decided to carry out my exploration was the same place where I first saw the beetles. There are a lot of trees growing along the Bulimba creek with thick canopies, creating a very humid and shady environment underneath. Inside that environment the fallen trees are abundant, many of them rotten. I set my sights on a medium size fallen tree that seemed to be thoroughly rotten because a gentle kick caused a large chunk of it to break off.





It all looked very promising to me. My first dig using a screwdriver near the root of the tree broke it into two halves and immediately something black inside caught my eyes. I was elated and carefully picked them up and placed them in my hands. There was no doubt they were stag beetles because of the hallmark of the stag beetle, the mandibles, were on top of their heads but they were not exactly the brown stag beetles I was looking for because their colours were not right. They were totally black. Initially I thought I had found a different type of stag beetle! But then something interesting happened.



While they were in my hands, the colours on their backs were gradually changing! At the very beginning, they were indeed black, but within a few seconds, their colours changed to brown, revealing the patterns of the Brown Stag beetle that I was searching for! In hindsight, I think when they are wet, their brown sheaths become black and only when they are dry do the brown colour and the beautiful marks show up.



At home, I did more searches on the colour change of the beetle. I haven't found any information on the English sites but one Chinese site describes the same colour change I have witnessed (<http://komurohu.pixnet.net/blog/post/38623672->



%E6%9C%AA%E7%9F%A5%E5%8D%97%E6%96%B9%E5%A4%A7%E9%99%B8%E7%9A%84%E5%B0%8F%E6%83%A1%E9%AD%94---rhyssonotus-nebulosus-%E6%BE%B3

In total, I found 6 brown stag beetles from two rotten tree trunks on that day (15 Dec, 2014). I also found a decomposed body of a Golden Stag beetle inside one of the tree trunks. It looks like the Brown Stag beetle is indeed very common in Queensland but because of their habit of living inside tree trucks, they are rarely spotted.



Exactly one year ago at the same location, I found a dead body of the Golden Stag beetle as shown in the adjacent picture. I have never been able to find a live one.

I would like to know the information on how to capture a live golden stag beetle if any of the club members can offer some valuable insights.



Photos Hongming Kan

A Problem with Identifying Moths - *Peter Hendry*

Peter Kuttner, from Mt Tamborine, sent me the attached moth images hoping I could identify them. I concluded, despite the differences, Figs 1 and 2 were the same moth. I also came to the conclusion that all 3 images were of moths in either the family Geometridae or Noctuidae. I searched high and low without any success. With both moths being rather distinctive, I expanded my search into other families despite believing they belonged to the aforementioned. I called upon a couple of club members regarding Figs 1 and 2. They also had no idea. With no success



forthcoming, I called upon the expertise of Ted Edwards from the Australian National Insect Collection in Canberra. The answers were quite surprising:

“Fig. 1 and Fig. 2 are a species of *Idiodes* in the (tribe) Lithinini, (subfamily) Ennominae, (family) Geometridae. A. J. Turner was aware of this species and had a manuscript name for it but died before the name was published. It is reasonably common in the S. Qld and N. NSW rainforests.

Fig. 3 is more of a problem. I could not match it with anything in the ANIC and it may be a new species but I could not be sure. It is closest to *Planolocha obliquata*, another Lithinini.”



So if you are having problems identifying a moth, in spite of how distinctive it might be, the reason may be it is just unnamed.

A.J. Turner (1861-1947) was a Paediatrician and Entomologist and is responsible for naming more than 3,500 species of Australian Lepidoptera, more than any other author.

Many thanks to Peter Kuttner for his inquiry and special thanks to Ted Edwards for his rapid response to my query.

Photos Peter Kuttner

Unusual butterfly life history aberrations – *Wesley Jenkinson*

Having a passion for observing life histories of Australia's butterflies since an early age, including moths as well in the last few years, it seems there is always something new to discover. Whether it is a new larval host plant for one of our butterflies (which one would think most would have already been discovered) or countless unknown moth larval hosts/host plants (most of which are still largely unknown) there will always be a few oddities. Below are four previously unpublished examples from the past few years.



1/ During a trip to northern New South Wales with John Moss during February 2012, at a roadside stop near the Gyra-Ebor / Rockvale Road intersection, a male melanistic form of the Spotted Brown (*Heteronympha paradelpha*) was captured. The adults of both sexes were very common at this location.



Male melanistic form



Male normal form

2/In March 2013 while about to enjoy chewing on a nice fresh sweet corn cob straight from the vegetable garden, I noticed a tunnelling larva. Thinking it was a larva of the commercial pest Corn Earworm (*Helicoverpa armigera*) moth, it was about to be squashed. On a closer inspection it was an unexpected larva of the attractive Bright Cornelian butterfly (*Deudorix diovis*). The larva and corn were kept in a container for observation.

After four days the larva started to pupate and formed a perfect pupa. However the adult failed to emerge. I have a Tulipwood tree (*Harpullia pendula*), known hostplant for this butterfly, which is growing about 4-5 metres from where the corn was growing. Most likely the larva was dislodged from an *Harpullia* seed capsule and crawled over onto the corn and continued feeding within the cob in an effort to survive.



Images - View showing part of tunnel and dorsal rear view of larva hard anal plate and ejected 'yellow' frass in container



3/ During late 2012, a lycaenid specimen was given to me for setting by our club president Ross Kendall. Ross reported that the larva had been located and raised to an adult on a cultivated citrus tree.

The specimen was identified as a very small female Cycad Blue (*Theclinessthes onycha*), and no doubt growth retarded by an unsuitable host plant. On several occasions I have observed females of this species ovipositing on the buds of Rose plants (*Rosa* spp.) and once on Rattle Pod plants (*Crotalaria* spp.), in which the resultant larvae didn't accept either plants and died.



Images- (Photographed together) Female *Theclinessthes onycha* with wingspans 17mm and 28mm

4/ In April 2013 several first and second instar larvae of the Tailed Emperor (*Polyura sempronius*) were located feeding on the same *Crotalaria* growing in my garden. The larvae were 'sleeved' on the plants with netting bags. They all failed to survive on these plants although they successfully utilise many other legumes in at least four plant families; eg Moss (2010) lists 40 species for this region.

Over the years there have been a number of other abnormalities of individual butterfly specimens that others in our group have identified or collected. These include a gynandromorph Orchard Swallowtail, yellow painted Glasswing, albino Lemon Migrant, hybrid Yellow/Orange Migrants and a melanistic Large Grass-Yellow with all yellow markings replaced by light brown!

Occasionally ovipositing females seem to 'get it wrong' when it comes to egg laying on their host plants. This is one aspect that can make field observations very interesting, as one does not know just where and when the next discovery will be!

Photos Wesley Jenkinson

Reference:

Moss, J. T., 2010. Butterfly Host Plants of South-east Queensland and northern New South
3rd ed. BOIC.



LETTER

Via email from Garry Sankowsky, North Queensland – 1.2.2015

Hi Daphne,

The dry is certainly over here with storms every other day and the butterflies are really on the go. We had a migration of Lemon Migrants here at the same time as south Qld so there may have been a massive overwintering colony somewhere. They were all form *crocale* (*Catopsilia pomona crocale*) so they did not hatch after the Dec/Jan rains or they would have been *C. pomona*. Even though the Brigalow Scrub in central Qld has been completely exterminated large numbers of *Cassia brewsteri* have survived due to their persistent suckering ability and they can still produce huge numbers of migrants. Nothing like in the 60's but still big numbers.

Cheers Garry

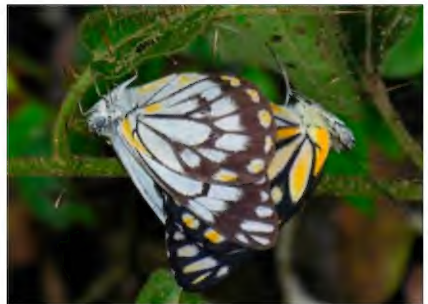
ARTICLES FROM PAST ISSUES

From Issue #47 December 2007

The Caper White Migration – Peter Hendry

The Caper White butterfly (*Belenois java*) has made another impressive migration this year. The migration has been noted in our newsletter in past reports including No.12, March 1999, p.15 wherein John Moss reported on “Fellow- travellers in a Caper White Migration” in October 1998. In No.31, December 2003, p.32, David St Henry in his report (from North Rockhampton) on the Lakes Creek State School butterfly habitat regeneration project, recorded seeing a migration in 2003 and in No.43, December 2006, p.22, Mary Hackett from her herb farm at Middle Dural NSW wrote on the 2005 migration : “Their mass migration overwhelmed me in the garden as I stood with arms extended, exchanging salutations as they dipped and brushed my hair and fingertips in passing.”

So let's take a closer look at the butterfly and its migration. The Caper White is a medium sized butterfly with a wingspan of 55mm. There are two subspecies of Caper White in Australia, *Belenois java teutonia* and *Belenois java peristhene*. On the mainland *B. j. peristhene* has only been recorded on the east coast at Percy Isles northeast of Shoalwater Bay QLD and near Sydney NSW. *B. j. teutonia* occurs in two colour forms, pale and dark, the dark form being most notable in the females. While the pale form of the female is similar to the male, the dark form has a much broader black suffusion around the edge of the wings. The larvae feed on species in the plant family Capparaceae, mostly in the genus *Capparis*,



A mating pair



but also use the Warrior Bush (*Apophyllum anomalum*) which is widespread in semi-arid areas of NSW and southwest QLD. The pale yellow eggs, which later turn orange, are 1.4mm high x .8mm and are laid in clusters. One female was reported laying 114 eggs in 30 minutes! The larvae reach 32mm in length and are olive green to chocolate brown in colour, with numerous raised yellow spots. The pupa is up to 25mm long, usually mottled white with black patches, but sometimes pinkish white or almost wholly white or wholly black. No one really understands the reason for the migration. One theory is that the larvae build up in such large numbers that they devoid the area of available host plant and the adults migrate to find more. However in many cases they fly into areas where no host plants exist or fly straight out to sea, to a certain death. It is reported that the migration takes place every year and in some years goes unnoticed due to the lack of numbers. I cannot imagine the host plants being completely stripped in those years, unless due to lack of intervening good rain, they have not recovered from previous years. The direction of the migration varies not only depending on where it is observed, but even varies during the migration. *Braby, quotes several sources which give the following directions: In southeast QLD, southeasterly migrations; inland southern NSW, southerly; ACT, northeasterly; Sydney, both northerly and southerly; central VIC, westerly; northwest VIC, southeasterly. **R.Grund, in a web article on South Australian butterflies, stated "the migrations proceeded southerly to the lower southeast region of South Australia and to southwest Victoria, then turned west to the Fleurieu Peninsula, Kangaroo Island and Yorke Peninsula, and then made a northerly turn before disappearing back north, presumably from where they started". So there remains much to learn.

As the migrations in Queensland take place during October and November, and as I take holidays during that period, I am privy to some marvelous sights during large migrations. It is hard to contemplate the number of individuals involved. In 2005 I drove from Sheldon (near Brisbane) to my bush block west of Bundaberg and saw Caper Whites the full length of the journey. They were so thick just south and north of Maryborough I could not drive without hitting them. That year I stood in my mother's garden at Manly (Brisbane) and counted 16 crossing a 20metre line in one minute. This year, on the 27th of October, I was on a 1000 acre block near Deepwater, south of Tenterfield, in NSW and saw hundreds taking nectar from two species of Tea Tree (*Leptospermum*) which were in full flower, but it was a small patch of *Callistemon pungens* that really attracted their attention. Whether it was the flower colour (mauve - as opposed to the white leptospermums) or the fact that the bottlebrush had recently opened (with a possible higher nectar content) it was the preferred species.



Adult feeding on *Callistemon pungens*



I later returned to the bush block west of Bundaburg (during overcast and showery conditions) where I found larvae and eggs on a caper species (*Capparis canescens*) in the open forest area. Down by the river in the vine scrub where *Capparis arborea* and *C. sarmentosa* grow, John Moss and I observed a mating frenzy. All of the Caper Whites were pairing up, except one particular female, which when males approached raised her abdomen, as if willing to accept a mate, but none obliged! We observed this behavior for some time, and no mating occurred. In researching for this article I read that the females do this to let the males know they are already fertile; my observations seem to bear this out. The butterflies here showed no obvious signs of migrating, but this may have been due to the overcast conditions. The most observed species flying were Caper Whites and Large Grass-yellows. Many of the pupae found were attached to other nearby plants and some appeared to be parasitised, but after reading that the pupae can be coloured black I am not so sure.

When migrating the female will stop and lay on any host plants they find, dispensing large numbers of eggs at a time. During one migration the late Dr G. A. Waterhouse estimated a total of 250,000 eggs were laid on a large tree caper in his garden. Eggs have been reported to be laid on some non host plants, including cultivated orange, *Zieria* sp. and *Correa baeuerlenii* (Rutaceae), as well as *Banksia ornata*



Eggs on *Capparis canescens*

and *B. serrata* (Proteaceae). As expected the resulting larvae do not survive and in many cases the eggs are infertile. During these times many home gardeners with cultivated *Capparis* species will experience defoliation of their plants. In my Sheldon garden, my *Capparis arborea* is planted in heavy shade and generally seems to be left alone for this reason. However this year, for the first time, I found 101 eggs on one leaf, possibly from one female.

Apart from all the media reports, some of our members have reported the following. Richard Zietek said all of his *Capparis* species have been stripped clean this year. Daphne Bowden tells the story that while attending the local Spring Parade on the waterfront at Manly, when the pipe band struck up to start the parade, as if on cue, a large cloud of resting Caper Whites rose from the wall (or maybe the sand) of the



Pupa on a non host plant *Acalypha* sp.

Esplanade to continue on their merry way. Lois Hughes said she was dragged kicking and screaming by husband John up the slopes of Mt Cotton to two isolated *C. arborea* trees completely covered in butterflies and still containing many larvae and pupae. (I may have embellished “the kicking and screaming” bit, but she was in a long dress and dress shoes!)



Photos by Peter Hendry

**** South Australian Butterflies Data Sheet R. Grund**
http://users.sa.chariot.net.au/~erg/java_ds.htm

OTHER GROUPS' ACTIVITIES

Held at: Redlands IndigiScapes Centre, 17 Runnymede Rd, Capalaba

it was meant to be eaten. Learn about native gardening and how you can use natives to create habitats. Composting, worm farming, mulching and how to recycle your green waste. Buy plants and seeds and get some great new ideas for your garden. Get the help you need with advice from the experts. Workshops & demonstrations, arts & crafts, music & food!

this fun-filled event! There will be wildlife displays, mini workshops, music, arts and craft, kids activities, and food to enjoy.

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

See enclosed flyer. The meeting will be followed by a guided walk through the gardens and bush area of IndigiScapes.

Planning and General Meeting

What: Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members. A walk around the lake will follow the meeting.

When: Saturday May 9th, 2015 from 10 am

Where: Marie-Louise Johnson's place at Forest Lake - address provided on RSVP

Who: All members are welcome.

RSVP: Marie-Louise on 0422 970 184 or email nabid@aapt.net.au

Indigi Day Out Saturday 6th June, 2015 - 10am to 4pm.

See details in Other Groups' Activities – We will have a display at this event.



DISCLAIMER

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
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- Daphne Bowden who works on layout, production and distribution
- John Moss, Dr Anne Dollin and Martyn Robinson for scientific referencing and proof reading of various articles in this issue of the magazine
- Printing of this publication is proudly supported by Brisbane City Council



We would like to thank all these people for their contribution.

Dedicated to a better Brisbane

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Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Next event - AGM – 18th April, 2015, at Redlands Indigiscapes Centre, Capalaba

